CARNIVOROUS PLANT NEWSLETTER

Journal of the International Carnivorous Plant Society

Volume 37, No. 4 December 2008

CARNIVOROUS PLANT NEWSLETTER

Journal of the International Carnivorous Plant Society
www.carnivorousplants.org

Volume 37, Number 4
December 2008

Front cover: *Pinguicula macroceras* from eastern Oregon. Article on page 100. Photograph by Barry Rice.

Back Cover: The new cultivar *Utricularia* 'Nüdlinger Flair'. Article on page 110. Photograph by Thomas Carow.

Carnivorous Plant Newsletter is dedicated to spreading knowledge and news related to carnivorous plants. Reader contributions are essential for this mission to be successful. Do not hesitate to contact the editors with information about your plants, conservation projects, field trips, or noteworthy events. Contributors should review the "Instructions to Authors" printed in the March issue of each year. Advertisers should contact the editors.Views expressed in this publication are those of the authors, not the editorial staff.

All correspondence regarding dues, address changes and missing issues should be sent to the Membership Coordinator at the ICPS. Do not send such correspondence to the editors. Checks for subscriptions should be made to the ICPS in US funds. Dues for 2008 are $25.

ICPS, Inc.
PMB 322
1564-A Fitzgerald Drive
Pinole, CA 94564-2229, USA
icps@carnivorousplants.org

Date of effective publication of the September 2008 issue of Carnivorous Plant Newsletter: 29 August 2008.

The ICPS is the International Cultivar Registration Authority (ICRA) for cultivated carnivorous plants according to The International Code For The Nomenclature of Cultivated Plants. Send relevant correspondence to the ICPS, Inc.

PUBLISHER: ICPS, Inc., Pinole, California. Published quarterly with one volume annually. Graphic Production: Suzanne Hedderly, 1500 West Laburnum Avenue, Richmond, VA. Printer: Kandid Litho. Logo and masthead art: Paul Milauskas. Dues: $25.00 annually. ISSN #0190-9215.

Contents

Finally, some time to enjoy my plants!

Barry Rice • P.O. Box 72741 • Davis, CA 95617 • USA • barry@sarracenia.com

Keywords: editorial.

Greetings, ICPS membership!

Quickly stated; after about 1.1 decades of editing Carnivorous Plant Newsletter (CPN) I am stepping down from duty. Serving as coeditor has been a fine experience, but it is time to move on. While retiring from my official duties, I am not leaving the ICPS entirely. I will be writing my own papers, and it is likely I may even help edit an occasional CPN paper.

What will happen to our beloved CPN upon my departure? I can only imagine that it will improve. For the past several months I have been helping to train a successor. I will let him introduce himself in our next issue. However, for now I will say that I am thrilled and absolutely confident to have him take the editorial controls of our fine journal.

As I leave, I must thank two very important people. The first is Dr. Jan Schlauer. Jan is an extraordinary scientist—passionate about his field, immutable in adhering to scientific truths, and a man of impeccable integrity. It has been an honor to work with him. Second, I extend a warm thanks to Steve Baker, who produced CPN's page design for approximately fifteen years; in doing so he served the ICPS longer than anyone else except the organization's original founders.

Also, importantly, I wish to thank every person who took the time out of their busy lives to submit articles to CPN over the last 11 years. These submissions have made our journal possible. The writers, and not the editors, create the journal, as it is impossible to edit an empty page! I am leaving CPN's new editorial staff with enough edited manuscripts for a few excellent issues of CPN in 2009, but it is your interesting submissions that keep the journal exciting.

It is bittersweet that I will not be in such constant communication with the extraordinarily great souls and minds that I have encountered in the course of my editorial work, but maintaining those connections will be a task that I will soon have more time to pursue—that, as well as my field research, photography, horticultural experiments, and all the other things that make carnivorous plants so overwhelmingly fascinating to me.

Cheers!

Barry Rice
Woodland, California

Observations of isolated *Pinguicula* populations in the western USA

Barry Rice • Center for Plant Diversity • University of California • Davis, California 95616 • USA • barry@sarracenia.com
Arthur Yin • San Jose, California • USA • arthuryin@gmail.com
Gina E. Morimoto • San Jose, California • USA • gemorimoto@gmail.com

Keywords: Observations: *Pinguicula macroceras*, *Pinguicula vulgaris*, California, Oregon, Montana.

Abstract

A site for *Pinguicula* in California, far from previously studied sites, is investigated in detail for the first time. Comparisons between this population and other western USA populations of *Pinguicula* are made, which suggest that the plants at this site seem more allied with *Pinguicula macroceras* Link subsp. *macroceras* than *Pinguicula macroceras* subsp. *nortensis* J. Steiger & J.H. Rondeau. Further investigation is suggested to confirm the identity of these plants.

Introduction

The status of the species *Pinguicula macroceras* Link is a source of considerable disagreement in North America. The main source of this disagreement is rooted in arguments about whether it is truly distinct from *Pinguicula vulgaris* L (Casper 1962; Schnell 2002). In this paper, we summarize the current situation, setting the stage for the presentation of new data.

For these two species, the geographic situation (Casper 1966; Schlauer 2002; Schnell 2002) can be described in the following terms. In the lower 48 states of the USA, one can find *P. macroceras* in the west (Washington, Idaho, Montana, Oregon, and California), while *P. vulgaris* occurs in the east (Minnesota, Wisconsin, Michigan, New York, and Maine). Looking northwards, the range for *P. macroceras* includes the Yukon, British Columbia, Alberta, and continues westwards through Alaska to Russia (Kamchatka Peninsula) and Japan. For *P. vulgaris*, the range includes all of the Canadian provinces except Nova Scotia, Prince Edward Island (and perhaps British Columbia); the range then continues eastward into the Old World. A potential range overlap and even hybridization zone for these two species may occur in Alaska, the Yukon, and possibly British Columbia.

Ecologically, *P. macroceras* is usually petrophilous (Steiger 1975), growing on wet outcrops of granite, serpentine, etc., and only occasionally in meadows. Meanwhile, *P. vulgaris* is more typically found in fens, dune swales, and sphagnous sites (Schnell 2002). However, it is possible that this is due more to suitable niche opportunities available in the two different geographic regions—*P. vulgaris* does occur on mossy rocks, wet seepages, and rock crevices in the upper Great Lakes region (Schnell 2002; Wells et al. 1999). Vegetatively, there are no reliable differences between the plants.

In flower, the primary difference is that the three lower corolla lobes (i.e., petals) are usually touching or overlapping in *P. macroceras*, while they are not touching in *P. vulgaris* (Casper 1962). This overlap is in part because the lower petals of *P. macroceras* are more broadly rounded (in this case, subobovate-oblong) vs. the petals of *P. vulgaris*, which are more bluntly rectangular (oblong). While this criterion sounds simple, it is harder to apply in the field than one might suspect from the illustrations in Casper (1962). For example, the standardized photographs of *P. macroceras* (Steiger 1978, Figures 13-14) show that the overlap is small indeed, and is often

just a matter of the petals approaching overlap, but not quite achieving it. Meanwhile Steiger (1982, front cover) illustrates a *P. macroceras* plant of unspecified provenance in which the criterion of petals touching is easily observed. Although not documented in the literature, another character separating the flowers of these two species is that the corolla lobes of *P. macroceras* are further spread or reflexed, so the flower appears more open than the flowers of *P. vulgaris* (J. Steiger, pers. comm. 2008).

Another floral feature that Casper (1962) used is the degree of fusion of the two lower calyx lobes (i.e., sepals). They are split more along their length in *P. macroceras* than they are in *P. vulgaris*. Unfortunately, this character has caused some problems. First, Casper (1962) was inconsistent in his specification of the degree of calyx lobe fusion for *P. vulgaris*, indicating it to be "split up to 2/3 of its length" in his key, but "grown together to 2/3 of their length" in the body of his text. Since Casper later specifies that a distinguishing feature of *P. macroceras* is "its deeply separated lobes of the lower lip of the calyx", it is reasonable to conclude Casper's intentions were to say that the calyx lobes of *P. vulgaris* are fused for 2/3 of their length. In his monographic treatment of *P. vulgaris*, Casper (1966) later wrote "*labium infernm bilobum lobis usqne ad 1/2-2/3 longitndinis connatis ovato-lanceolatis*" (lower lip two-lobed, with lobes connate up to 1/2-2/3 of their length, ovate-lanceolate), and for *P. macroceras* he noted "*labium infernm bipartitnm laciniis lanceolatis usqne ad 1/2 longitndinis connatis divergentibns*" (lower lip two-lobed, with lanceolate lobes which are connate up to 1/2 of their length and divergent), thus confirming his intentions. Nonetheless, we consider the calyx lobes to be a difficult criterion to use as there is an apparent lack of consensus in how one should measure this feature. Note that Casper's drawings of *P. vulgaris* calyces illustrate fusions of both 2/3 and 1/2 (Casper 1962, Figure 3, left and right respectively).

Flower sizes are also cited as useful demarcations between the two species. Casper (1962) presented graphs of the overall corolla length (including spur), and spur length alone. He found that although the curves overlapped considerably, there were separate peaks in both graphs. Casper (1962) also recognized a separate variety, *P. macroceras* var. *microceras* (Cham.) Casper, but eliminated this from his 1966 monograph. Likewise, we will not recognize this variety further. A summary of his ranges for corolla and spur length are given in our Table 1.

The capsules of both *P. macroceras* and *P. vulgaris* are both noted by Casper (1966) as being ovoid. A more complete description of capsule shape for *P. vulgaris* would include pyriform (pear-shaped) and rarely globular (Legendre & Cieslak 2007).

Pinguicula macroceras subsp. *nortensis?*

In 1975, Steiger published a casual reference to a new entity he called "*Pinguicula macroceras* subsp. *nortensis*", with little more than a comment on habitat and chromosome number[1]. Twelve years later[2], Rondeau & Steiger (1997) established the name *Pinguicula macroceras* subsp. *nortensis* J. Steiger & J.H. Rondeau for those plants that occur near the border of California (N Del Norte, W Siskiyou counties) and Oregon (S Curry, S Josephine counties) within 80 km of the Pacific Ocean, almost invariably on serpentinic outcrops or soils (Rondeau 1995). This region marks the southwestern-most extent of *Pinguicula* in the USA. *Pinguicula*

[1]Steiger (1975) gives this as 2n=32, but later revised this to 2n=64 (Rondeau & Steiger 1997), which is the same ploidy level as all the other *Pinguicula* discussed in this paper.

[2]This name's saga may not be over! In drafting the Lentibulariaceae treatment for the new Flora of California (The Jepson Manual, 2nd Edition), one of the coauthors (BR) was told that the name *Pinguicula macroceras* subsp. *nortensis* was not published in a journal of sufficient distribution size to be considered "validly published."

Table 1: Characters used for *Pinguicula macroceras* and *P. vulgaris* identification.

	P. vulgaris[1]	*P. macroceras s. lat.*[1]	*P. macroceras* subsp. *nortensis*[2]	Castle Crags area site[3]
Spur	(1)3-6(10) mm	(1)6-9(11) mm	6-11 mm	(1.5)6-8(9) mm
Corolla	(9)15-22(29) mm	(12)18-27(30) mm	13-21 mm	(17)24-28 mm
Lower corolla lobes	Oblong; not touching or overlapping	Subobovate-oblong, entire; touching or overlapping	Oblong, entire; not touching or overlapping	Oblong, entire to emarginate; not touching or overlapping
Calyx fusion	1/2-2/3	1/2	1/2	(1/3)1/2-2/3(3/4)
Calyx shape	Ovate-lanceolate	Lanceolate	Blunt-tipped	Ovate, blunt-tipped
Capsule shape	Ovoid; also pyriform or globular[4]	Ovoid	Globular[5]	Ovate to pyriform

[1]Unless otherwise indicated, data in this column from Casper (1966), which includes "var. *microceras*".
[2]Data in this column from Rondeau & Steiger (1997) unless otherwise indicated.
[3]Newly reported data.
[4]Legendre & Cieslak (2007).
[5]From Rondeau (1995, p19).

populations occur at widely separated sites in this part of its range. As to be expected, these separated populations have distinct characteristics. It is this kind of distribution that invites disagreement among taxonomists: should the plants in these populations be given separate names, or should they be lumped together into a few, variable species?

The characters separating *P. macroceras* subsp. *nortensis* from *P. macroceras* subsp. *macroceras* are given in Table 1. The key differences are the shape of the tips of the calyx lobes, the shape and degree of overlap in the lower corolla lobes, and the flower dimensions. The authors also describe corolla hair differences, although they do not provide illustrations which would be useful in interpreting their comments. The capsule of *P. macroceras* subsp. *nortensis* is noted as globose (Rondeau 1995).

To illustrate the separation of characteristics of *P. vulgaris*, *P. macroceras* subsp. *macroceras*, and *P. macroceras* subsp. *nortensis*, we have plotted character ellipses on Figure 1. These ellipses use the spur lengths as the vertical major axes, and the corolla lengths as the horizontal major axes. In plotting these ellipses, we used the inner ranges for the value ranges from Table 1. For example, since Casper (1966) indicates the spur length of *P. vulgaris* to be "(1)3-6(10) mm", we used 3-6 mm as the vertical major axis for the *P. vulgaris* ellipse. Notice that the three taxa separate readily on this figure. There is considerable overlap between the two *P. macroceras* taxa, but this is to be expected since the dimensions used for *P. macroceras* subsp. *macroceras* given by Casper include plants later separated into *P. macroceras* subsp. *nortensis*.

If one were to include the complete range of observed values in creating character ellipses (i.e., 1-10 mm for the spur length for *P. vulgaris*), the situation is far more ambiguous. Figure 2 shows such a set of character ellipses. It is clear from this figure that, when considering outliers, the different populations of plants are not well separated. The different appearances of these two figures are central to the disagreements between taxonomic lumpers and splitters.

The characteristics specified by Rondeau & Steiger (1997) were selected to indicate how their new subspecies differed from *P. macroceras* subsp. *macroceras*. However, it is interesting to note that in some ways, *P. macroceras* subsp. *nortensis* is a population of plants that emulate *P. vulgaris* (mostly differing only in spur length and calyx tip shape, but with similar flower size

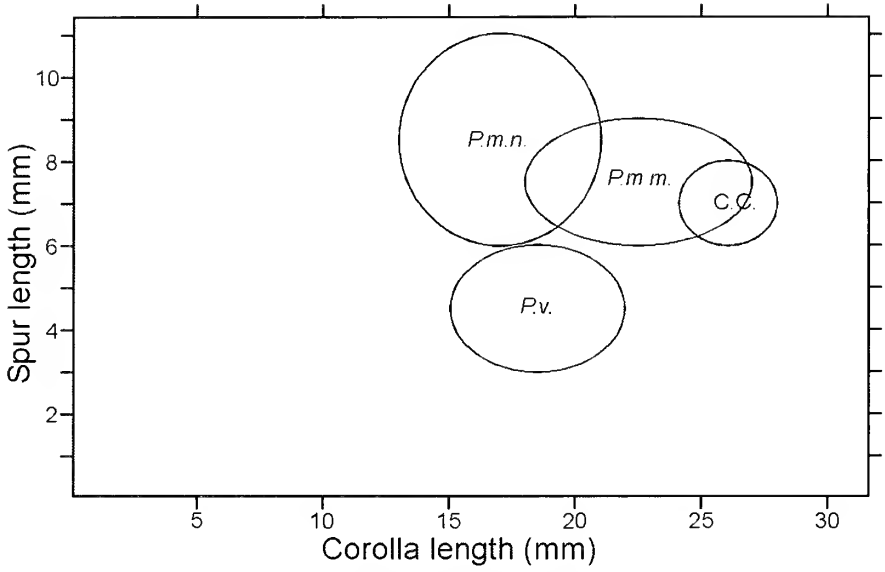

Figure 1: Character ellipses for *Pinguicula vulgaris* ("*P.v.*"), *P. macroceras* subsp. *macroceras* ("*P.m.m.*"), *P. macroceras* subsp. *nortensis* ("*P.m.n.*"), and the Californian population from the Castle Crags area ("C.C."). The vertical and horizontal major axes of each ellipse are set by the spur length range, and corolla length range (including spur), respectively. The values used are those for the inner ranges given for each character in Table 1 (i.e., 3-6 mm for the spur length for *P. vulgaris*).

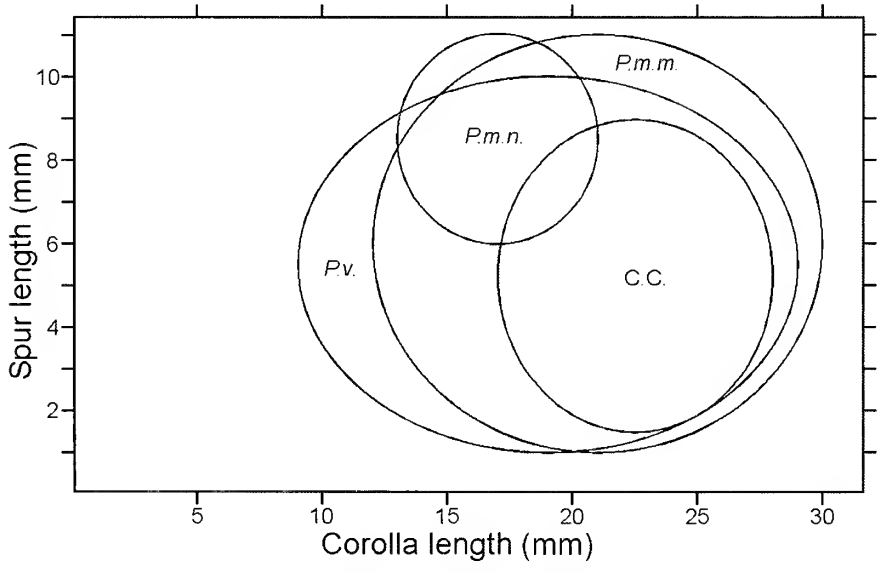

Figure 2: Character ellipses as in Figure 1, but for the entire range of character values supplied by the authors in Table 1 (i.e., 1-10 mm for the spur length for *P. vulgaris*). Since Rondeau & Steiger (1997) did not provide such data, the same character ellipse from Figure 1 is repeated for *P. macroceras* subsp. *nortensis*).

and petal shape). Given this, we pose the question: if these plants were displaced far to the east, would they be considered worthy of separation from *P. vulgaris* at any taxonomic level?

Site Comments: California

Led by Hawkeye Rondeau in 2002, one of us (AY) visited a site in south-central Siskiyou County not far from the Castle Crags Wilderness. Rondeau had heard rumors from a retired Forest Service employee of a *Pinguicula* population in this area, and had previously made a number of unsuccessful attempts to find them. Verifying the presence *Pinguicula* at this site would have been remarkable, since it would be a site 100 km southeast of any known *Pinguicula* sites (Rondeau, pers. comm. 2007). Although the 2002 trip was unsuccessful, two of us (AY, GM) returned in September 2005 and successfully found the population of plants growing on steep rock slopes. This precipitated a September 2006 trip by all three authors (and Elizabeth Salvia) to follow up on the observations.

The area is remarkable for many botanical and geological reasons. Marking the origin of a now-melted glacier, the region is rich in ericaceous species. Before our visit, the area was also known to house carnivorous *Darlingtonia californica* Torr. and *Drosera rotundifolia* L. During our 2006 trip, we also detected *Utricularia macrorhiza* LeConte in one of the many small lakes in the area; this latter plant was a new addition to the plants known in the area. In July 2007, the four of us returned to the area. With collection permits in hand, we were able to document both *U. macrorhiza* and *U. minor* L. in two lakes. Within a distance of a few kilometers, this area has five different carnivorous species from four genera, making it unexcelled in carnivorous plant diversity in the state.

The *Pinguicula* plants were in flower during the 2007 trip and easily rediscovered on serpentinic strata. We were astonished by the nature of the white patch on the lower corolla lip—it was much larger and clearer white than we had observed on other plants (see Figures 3, 4). Although striking, this is not considered a feature of taxonomic importance. Since the plants occur on privately owned land we were unable to collect plant material, but we did document the plants photographically and measure their floral characters.

We measured the following characters for 34 flowers: corolla length (including spur), spur length, and degree of calyx lobe fusion. Following the steps of Casper (1962), who apparently used the half-height of his distributions to define parameter ranges, we determined spur length and corolla length ranges (Table 1). Corolla lengths were measured by resting the flower on a ruler, so the effects of petals hanging downwards were addressed. The minimum spur (1.5 mm) and flower (17 mm) lengths are from three additional flowers that were clearly distorted and malformed. Character ellipses for the plants are plotted in Figures 1 and 2. The results suggest that this population of plants seems more allied with *P. macroceras* subsp. *macroceras* (at least on the basis of floral dimensions). However, the corolla shapes were variable and not diagnostic of one taxon or another. Alas, there are no easy answers here!

We observed with interest that nearly all the flowers had long spurs with minutely bifid tips (see Figure 5, 6). The lower lateral corolla lips were oblong and spreading, although the lower central lip was oblong-obovate and often clearly emarginate (see Figures 4, 5).

The calyx lobes were predominately (73%) fused 1/2 their lengths, although approximately 1/4 (21%) had calyx lobes fused 2/3 their lengths. Also noteworthy was that the capsules of nearly mature fruit were markedly asymmetric, and conical to pear-shaped (see Figure 7, left).

Site Comments: Oregon

In July 2006, one of us (BR) visited a *Pinguicula* site in Wallowa County, in eastern Oregon. A number of populations of *Pinguicula* occur in this area, but as there was little discretionary time to reach them, all the time was focused on one population of several hundred plants found

Figure 3: A plant from the Castle Crags, California area. Note how the lower corolla lobes tend to overlap, suggesting the identification as *P. macroceras* subsp. *macroceras*. Photograph by Barry Rice.

Figure 4: A flower from the Castle Crags, California area. Note how the lower corolla lobes are spreading in this specimen, and the emarginate central-lower lip. Photograph by Barry Rice.

Figure 5: Two flowers from the Castle Crags, California area. Notice the nearly overlapping lower corolla lobes and the minutely bifid spurs. Photograph by Arthur Yin.

Figure 6: The same two flowers shown in Figure 5, in profile. Notice the long spurs. Photograph by Arthur Yin.

growing in the spray of a small waterfall coursing down the spectacular Wallowa Mountains. As is typical for western USA *Pinguicula*, these plants were living either in cracks on the bare wet (in this case non-serpentinic) rock, or in small pockets of moist soil that had accumulated near the flowing water.

Conveniently, the plants were in flower at the time of the visit, and a number of observations and measurements were made. Most remarkably, the plants at this site all had extremely small rosettes, approximately 3-4.5 cm across at maturity. Some of the plants were in fruit, and had developed globular, nearly spherical fruit with little significant asymmetry (see Figure 7, middle).

The lower calyx lobes were fused approximately 1/2 of their lengths and were blunt-tipped. Based upon a small sample of only seven flowers, the spur lengths were 5.5-6.3 mm (avg. 5.8 mm), and total corolla lengths (including spur) were 16.3-19.0 mm (avg. 17.9 mm). These measurements were obtained by photographing the flowers with rulers in the field of view. The spurs were cylindrical and blunt-tipped (two spurs were minutely emarginate, as in the Californian plants described earlier). The lower corolla lobes were entire, spreading, and at most barely touching. In shape they were somewhere between obovate and oblong. The white spot on the lower lip was relatively small (see Front Cover).

Plants in this geographic range were included in the list of specimens examined by Casper (1962), and treated by him as *P. macroceras*. How should the plants in this pocket population be classified? It is unclear as too few plants were measured to make a statistically significant statement, or to create reliable character ellipses as in Figures 1 and 2. The nature of the corolla lobes is consistent with just about any of the three entities we have discussed; we will allow future workers to puzzle this issue more fully.

Figure 7: *Pinguicula* infructescences from sites discussed in the text: California (left), Oregon (middle), Montana (right). Images are not all at the same scale. Photographs by Barry Rice.

Site Comments: Montana

In the fall of 2006, one of us (BR) had the opportunity to explore parts of western Montana. During this trip attempts were made to see *Pinguicula* populations in Glacier National Park, but only one site was reached. This site was an alpine roadside location at 1750 m a.s.l. where water permanently trickled over non-serpentinic rock slabs. The *Pinguicula* were entering dormancy, and it was so late in the season that the fruit had mostly all dehisced. However, a few useful observations were possible.

First, the mature capsules were elongated with obtuse tips, and asymmetrically mounted (see Figure 7, right). Second, all the calyx lobes were deeply divided to a depth of about 1/2 their total length, and were sharply pointed. (Since these observations were not made at anthesis, it is possible they might have changed as the capsules matured.) Finally, these plants were large; comparable in size to those that are typically seen along the California-Oregon border.

Plants from this range were included in the list of specimens examined by Casper (1962), but it would be interesting to review these specimens in flower to learn more about their affinities. However, from the observations in hand, it would seem that these plants would be assigned to *P. macroceras* subsp. *macroceras*.

Montana, incidentally, has a number of other remarkable and as yet underappreciated surprises for carnivorous plant enthusiasts, such as a few highly disjunct populations of *Drosera linearis* Goldie. However, to see such plants naturalists must be equipped with a strong back, a good set of legs, and a willingness to hike in lands with large populations of black bears and grizzly bears!

Concluding Notes

In the western states of the USA, *Pinguicula* occur in isolated sites. Separated by distances far greater than those traversed by pollinators, these plants are likely not in genetic communication and have developed into populations that have differences as well as similarities. How these are to be interpreted is possibly as much a matter of philosophy as botany, and we encourage discussion on the topic. This is clearly a complicated matter, and our exposure to the species discussed here (and related species in *Pinguicula* sect. *Pinguicula*) is as yet too limited to give us confidence to enter this difficult matter any further than we already have.

For the horticulturist seeking the certain identification of plants in their collections, madness surely awaits: a single cultivated plant will probably be impossible to identify with security. The only way that a horticulturist can be sure of his or her plants' identities is to religiously track their provenance information.

Science may never reach consensus on the status of these plants. But does that matter? Overall, we do not think so. Our lack of understanding does not detract from their wonders. So let us do the right thing and protect them from damage, so that our descendents can have the same pleasure in scratching their heads in confusion and frustration.

Acknowledgements: Arthur Yin and Gina Morimoto wish to thank Hawkeye Rondeau for his guidance to find and research this wonderful site throughout these past years. Barry Rice wishes to thank his wife Elizabeth Salvia for her supporting fieldwork, Julie K. Nelson (US Forest Service) for speedy processing of California collection permits, the owners of the California site for permitting our continuing research on their property, Peter Lesica (University of Montana) and Hawkeye Rondeau for site suggestions in Montana, and Rob Taylor (The Nature Conservancy) for site suggestions in eastern Oregon. The authors wish to thank Juerg Steiger for his helpful suggestions as a referee for this paper. No permits were required to visit the public and unposted private locations described in this paper; Utricularia collections were conducted under permit #16080 granted by the US Forest Service (Shasta-Trinity National Forest). Because of the sensitivity of these sites, location information will not be discussed with the public. Both

before and after leaving the California site, we sprayed our boots with a 10 percent bleach solution. The area is infected with the fungal pathogen *Phytophthora lateralis* Tucker & Milbrath. This pathogen causes Port Orford cedar root disease in *Cupressus lawsoniana* A. Murray, a tree frequently associated with *Darlingtonia* habitats and which may have an important role to play in sustaining the conditions suitable for *Darlingtonia*. We encourage all visitors to *Darlingtonia* habitat to keep their boots clean to avoid spreading this pathogen.

References

Casper, S.J. 1962. On Pinguicula macroceras Link in North America. Rhodora. 64: 212-221.

Casper, S.J. 1966. Monographie der Gattung Pinguicula L. Stuttgart: Bibliotheca Botanica. Heft 127/128: 171-179, Figure 45.

Legendre, L. and Cieslak, T. 2007. Pinguicula vulgaris L. in the Champagne state of France: life in an alkaline bog. Carniv. Pl. Newslett. 36: 104-113.

Rondeau, J.H. 1995. Carnivorous Plants of the West, Vol. II: California, Oregon and Washington. Privately published by author. ix+82p, p15-24.

Rondeau, J.H. and Steiger, J.F. 1997. Pinguicula macroceras subsp. nortensis, a new subspecies of Pinguicula (Lentibulariaceae) from the California-Oregon border. International Pinguicula Study Group Newsletter 8: 3-8.

Schnell, D.E. 2002. Carnivorous plants of the United States and Canada. (2nd Edition) Timber Press, Portland, 468p, p296-308.

Schlauer, J. 2002. World Carnivorous Plant List—Nomenclatural Synopsis of Carnivorous Phanerogamous Plants, http://www.omnisterra.com/bot/cp_home.cgi, accessed July 2007.

Steiger, J.F. 1975. The Pinguicula species of the temperate growth type and their cultivation. Carniv. Pl. Newslett. 4: 8-18.

Steiger, J.F. 1978. Standardized photography of Pinguicula blossoms. Carniv. Pl. Newslett. 7: 43-50.

Steiger, J.F. 1982. Pinguicula macroceras photographs. Carniv. Pl. Newslett. 11: 29, 52.

Wells, J.R., Case, F.W., and Mellichamp, T.L. 1999. Wildflowers of the Western Great Lakes Region. Wayne State University Press, Michigan, 304p, p253.

New Cultivars

Keywords: cultivar: *Utricularia alpina* × *humboldtii* 'Nüdlinger Flair'.

Utricularia alpina × *humboldtii* 'Nüdlinger Flair'

Submitted: 25 October 2007

In June 1994 I made a crossing between *Utricularia alpina* (female) and *U. humboldtii* (male). Two flowers set seed, some of which germinated. The plants obtained from one capsule are growing very well and have been setting flowers since 2000 (see Back Cover).

The petioles look similar to those of *U. alpina*, but have a much longer stalk. The lamina is obovate to broadly lanceolate and up to 10 cm long and 4 cm wide. In shady conditions, the leaf stalk is up to 20 cm long, so the whole leaf could be up to 30 cm long. The traps looks similar to those of *U. alpina* and are about 1 mm in diameter.

The flowers are produced mainly in early summer. The inflorescence reaches up to 30 cm in length and usually bears two to four flowers. The flowers share more characteristics of *U. humboldtii* and are usually the same size as that species. They are about 5 cm long and beautifully colored. The corolla has the blue-violet coloration of *U. humboldtii*, the lower lip has two very conspicuous, swollen yellow rims on the palate, which are prominent as in *U. humboldtii*. These rims are surrounded by a beautiful white spot, which however is much larger than in *U. humboldtii*. The yellow rims with the white spot in the middle of the blue-violet corolla give a nice contrast as it is not found in any of the large flowered *Utricularia* species or hybrids. The calyx lobes are equal, narrowly ovate, about 2 cm long and have the same coloration as the corolla.

I grow the plants in pure sphagnum moss, where they produce numerous offshoots and cover the whole surface very quickly. The plants like to grow in similar conditions as *U. alpina*, not so wet as *U. humboldtii*. The temperatures in winter are about 12°C, in summer around 15-25°C. They get about 3-4 hours of direct sunlight per day.

I named this hybrid on 10 May 2006, after the old town of Nüdlingen (Bavaria, Germany) where my carnivorous plant nursery has been located for 25 years now. Each year we have a nice village fair called "Nüdlinger Flääг" which inspired me to choose this name.

—Thomas Carow • Ümpfigstr. 5 • 97720 Nüdlingen • Germany • carow@t-online.de

Book Review

Bailey, T. S. 2008. Miraculum Naturae: Venus's Flytrap. Trafford Publishing. 279 pp., includes CD ROM. Victoria, BC, Canada. ISBN 978-1-4251-3267-5. US$34 plus shipping. Order from www.thevenusflytrapbook.com.

Reviewed by Barry Rice

Author Tim S. Bailey is clearly a man obsessed! In his book (and bonus CD), Tim has collected everything that interests him on the single species so dear to so many of us: the miraculous *Dionaea muscipula*.

I suspect that anyone reading this review—presumably a member of the ICPS—already knows a great deal about carnivorous plants, and certainly has the skill to grow Venus flytraps reasonably well without Bailey's advice. So if all that interests you is basic cultivation knowledge, there is little in this book that is likely to surprise or enlighten. On the other hand, you just might find a few new morsels to delight. After all, the sections on basic ecology, carnivory, and horticulture span 150 pages. That is quite a bit of material!

For me, however, the book really picks up steam in its latter half, where Bailey explores the botanical history of the waggish tipitiwitchet. And what a history it is!

Let me set the stage briefly. In the late 1700s, carnivory in plants was unknown. Yet a few New World colonial naturalists were sending astonishing tales of discovery back to England, suggestive of such a mind boggling possibility. Scientists and expert horticulturists in England were mad with desire to learn about, see, and grow these plants, but there were exasperatingly few opportunities to obtain the plants because of the long sea voyage involved. (Yes, my children, this was before air travel, telephones, and even—gasp!—the Internet.)

Bailey provides a biography of each of the major and minor players involved in the drama of discovery: John and William Bartram, Collinson, Dobbs, Ellis, Garden, Gordon, Linnaeus, Solander, and Young. And if you think that science proceeds calmly and in a stately way, Bailey's revelations will surprise you. I am in particular thankful for the introduction to the story of William Young (1742-1785), a deeply flawed character seemingly plucked from the pages of a Dickens novel. Young's way of parading himself in front of royalty, angering his peers, and squandering his resources is horrifying.

I expect that readers of this review know the sordid way that the Venus flytrap earned its name, so embedded with sexual connotations, but if not, you can learn about it here. In this respect, Bailey's book owes much to Nelson & McKinley's 1990 book, Aphrodite's Mousetrap. However, this latter book is prohibitively expensive—even if you are lucky enough to find it.

One of the most adorable features of this book is how Bailey has included so many lengthy quotes from famous contemporary naturalists, all cooing over the Venus flytrap. I close with just a tiny sampling from these quotes to provide a taste:

> Charles Darwin: "I cannot make the little creature grow well."
>
> Arthur Dobbs: "To this surprising plant I have given the name of Fly Trap Sensitive."
>
> John Bartram: "My little tipitiwitchet sensitive stimulates laughter in all ye beholders...."
>
> Peter Collinson: "If I have not a specimen in thy next letter—never write mee more for it cruel to tantalize mee...."
>
> William Bartram: "Astonishing production! See the incarnate lobes expanding, how gay and sportive they appear!"
>
> Carl Linnaeus: "I must confess I never met with so wonderful a phenomenon."

New names for natural hybrids in *Sarracenia*

Larry Mellichamp • Botanical Gardens • University of North Carolina at Charlotte • 9201 University City Blvd. • Charlotte, North Carolina 28223-0001 • USA • tlmellic@uncc.edu

Keywords: New taxa: *Sarracenia ×naczii*, *Sarracenia ×bellii*, *Sarracenia ×casei*, *Sarracenia × charlesmoorei*.

Received: 9 September 2008

Introduction

For the past two years I have been working on my treatment of the family Sarraceniaceae for publication in Volume 8 of the comprehensive Flora of North America, due for publication in 2009. Through my studies, I have come to understand much better two of the current problems in *Sarracenia* in the Southeastern United States, and have solidified my views. This was done through a combination of examining dried herbarium specimens (representing our preserved knowledge of these plants), comparing specimens grown in a common garden where different plants are grown under almost identical environmental cond itions, and seeing the plants in the wild (see Figure 1). These problems involve interpretation of the *Sarracenia purpurea* and the *S. rubra* complexes. This paper considers natural hybrids involving these taxa.

Sarracenia ×naczii

As a result of these studies, I now fully recognize the Gulf Coast *Sarracenia rosea* Naczi, Case & Case as a valid species (I do not recommend so many authors for a species name!) This species was formerly known as *S. purpurea* subspecies *venosa* variety *burkii* Schnell. (Also,

Figure 1: Larry Mellichamp at the type locality for *S. ×charlesmoorei*, Escambia Co., FL, 3 Sept. 2007. Photo by Stefan Ploszak.

I do not recommend so many epithets for a taxon!) I also recognize *S. alabamensis* and *S. jonesii* as separate from *S. rubra*. I follow the perspective that *Sarracenia rubra* subsp. *wherryi* should be treated as a subspecies of *S. alabamensis*, i.e., *S. alabamensis* subsp. *wherryi*.

If you accept *S. rosea* as a separate species, then the hybrids that it forms with other species may be viewed as different taxa than if it were just a subspecies of *S. purpurea*. For example, the well-known wild hybrid *Sarracenia ×catesbaei* Elliott is a cross between *S. flava* and *S. purpurea*. It was described from a plant collected in Chesterfield County, South Carolina in 1824. This means that one parent was the traditional *S. purpurea*. *Sarracenia flava* also grows along the Gulf Coast and readily hybridizes with *S. rosea* (which was formerly treated as a variety of *S. purpurea*). These Gulf Coast hybrids have a different ancestry and can be distinguished from *Sarracenia ×catesbaei* of the Carolinas. Therefore, I designate a new name for hybrids between *S. flava* and *S. rosea*.

Sarracenia ×naczii Mellichamp *hybr. nov.* (see Figure 2).—TYPE: U.S.A. Florida. Escambia Co.: south side of Ocie Phillips Road, ca. 3 miles east of Perdido River. 3 Sept. 2007. *Mellichamp s.n.* (HOLOTYPE: UNCC, ISOTYPE: NCU).

Syn.: *Sarracenia ×catesbaei sensu* Bell *non* Elliott, J. Elisha Mitchell Sci. Soc. 68: 61. 1952, *p.p.*

Sarracenia ×naczii, hybrida naturalis nova inter S. flava et S. rosea, foliis erectis tubulatis e basi ad foramen, luteo-viridis, colore sanguineo ad rubiginoso suffusis vel venosis, 15-50 cm altis, cucullo cordato undulato, fauce plerumque atrosanguinea, petalis pallide luteo-subroseis. A Sarracenia ×catesbaei statura robustiore, foliis minus incrassatis, ore incrassato differt.

Plants intermediate between the parents, often showing hybrid vigor and making attractive specimens. Pitcher leaves erect, 15-50 cm tall at maturity, widely tapering from base to orifice, yellowish-green suffused with red or purple and with distinct maroon veins, especially in the upper part of the tube. The hood is large and flamboyant, erect to reflexed forward, broadly cordate, undulate or wavy, rarely not so, often pinched together somewhat in the middle. Often with dark red-purple color in the throat or neck, especially if the *S. flava* parent has this feature. The pitchers are usually finely hairy on the outside surface and the stiff bristles on the inside surface of the hood are usually 0.5-1.2 mm long, coming from the *S. rosea* parent. The flowers are variable, usually pale yellowish with a pink cast (not orange as you might expect from mixing yellow and pink flower colors). In differentiating this hybrid from *S. ×catesbaei*, the Gulf hybrid is more robust and stocky, a bit wider for the height than the Carolina hybrids, with thicker texture. There may also be a noticeably thicker orifice rim as you might expect from the *S. rosea* parent. Because of the great variation in *S. flava* across the Gulf Coast region, there will be much variance in the expressions of this common hybrid. As usually, there can be backcrossing and introgression with intermediate forms. Knowing where your hybrid comes from also helps to confirm its parentage.

I have named this hybrid in honor of botanist Dr. Robert F. C. Naczi, who painstakingly discerned the characteristics that led to recognizing *S. rosea* as a distinct species.

Sarracenia ×bellii

In a similar circumstance, the hybrid *Sarracenia ×readii* Bell was described as a cross between *S. leucophylla* and *S. rubra*. However, the type collection was from Washington County, in southwestern Alabama. Therefore, I would recognize today that this *S. rubra*-like parent is really a different species, *S. alabamensis* subspecies *wherryi* Case & Case, whose range is from barely in Mississippi across Alabama north of Mobile Bay to just barely inside Florida. So, any hybrids with a rubra-like parent from further east in Florida would most likely be with *S. rubra* subsp. *gulfensis* Schnell. In their 1956 paper on *Sarracenia* hybrids, Bell and Case mention on

p. 146 under *S.* ×*readii* that they found hybrids also in Santa Rosa County, Florida, numbered Bell 1526 and Case P-42. These hybrids could now be given a new hybrid name as they are formed by a different species crossing with *S. leucophylla*. Therefore I designate a new hybrid between *S. leucophylla* and *S. rubra* subsp. *gulfensis*.

Sarracenia* ×*bellii Mellichamp *hyb. nov.*—TYPE: U.S.A. Florida. Santa Rosa, Co., west side of Hwy. 87, just north of Yellow River, Case P-42, ca. 1952. (HOLOTYPE: A cultivated leaf of this specimen has been seen, pressed, and deposited in UNCC, *Mellichamp s.n.* Sept. 9, 2008.)

Syn.: *Sarracenia* ×*readii sensu* Bell *non* Bell, J. Elisha Mitchell Sci. Soc. 68: 69. 1952, *p.p.*

A S. ×*readii foliis glabratis, longioribus usque ad 42 cm altis, venis plus numerosis differt.*

Plants intermediate between *Sarracenia leucophylla* Raf. and *S. rubra* subsp. *gulfensis*, but especially differing from *S.* ×*readii* in being consistently taller (to 42 cm), and especially in having pitchers that are glabrous on the exterior, of thicker texture, and with more conspicuous red veins on the upper pitcher and hood, particularly the inner surface of the tube and on the hood. Also, the hood is usually longer than wide, 4 × 3 cm, and the edges of the hood curve upward while still being wavy. This is in contrast to typical *S.* ×*readii* where it is influenced by the *S. alabamensis* subsp. *wherryi* parent that has generally shorter pitchers that are consistently finely pubescent externally, flatter and less wavy-margined hoods, and much fewer veins on the inside of the tube and the terminal portions of the hood.

I have named this hybrid in honor of botanist Dr. Clyde Ritchie Bell, who produced a monograph of Sarraceniaceae in 1949 and, with F.W. Case, went on to compile data on most of the known wild hybrids in 1952 and 1956. This hybrid is rare, but should be sought where the narrow range of *S. rubra* subsp. *gulfensis* overlaps the wider range of *S. leucophylla* in the western Florida panhandle (Santa Rosa, Okaloosa, and Walton Counties) and just into adjacent Alabama in the Conecuh National Forest.

Sarracenia ×*casei*

In a converse situation, *Sarracenia* ×*gilpinii* Bell & Case was named for a hybrid between *S. psittacina* and *S. rubra* from Santa Rosa Co., Florida, just north of the Yellow River where S. ×*bellii* was found. Thus, its *S. rubra* parent is *S. rubra* subsp. *gulfensis*. Therefore, one can name the analogous hybrid of *S. psittacina* × *S. alabamensis* subsp. *wherryi* as a different hybrid.

Sarracenia* ×*casei Mellichamp *hyb. nov.* —TYPE: U.S.A. Alabama. Washington Co., along US 45 just north of Deer Park, 7 Aug. 1985. *Mellichamp s.n.* (HOLOTYPE: UNCC; ISOTYPE: NCU).

Syn.: *Sarracenia* ×*gilpinii sensu* Bell & Case *non* Bell & Case, J. Elisha Mitchell Sci. Soc. 72: 149. 1956, *p.p.*

A S. ×*gilpinii foliis molliore vestitis differt.*

Plants intermediate between *Sarracenia psittacina* Michaux and *S. alabamensis* subsp. *wherryi*, but especially differing in the outer surface of the pitcher being softly pubescent, a trait from the *S. a.* subsp. *wherryi* parent. The leaves on my specimen are only faintly hairy; but they are not thick textured like a hybrid with *S. leucophylla* or *S. r.* subsp. *gulfensis* would likely be. The leaves are ascending and do not have the globose head of *S. psittacina*. The hood is not at all undulate, so I rule out *S. leucophylla* as a parent. The flowering scape is much longer than the leaves, 35 cm in my specimen, and the flower is small, ruling out *S. alata* as a parent. This is a

rare hybrid, mainly because *S. psittacina* flowers so late; but I have seen *S. a.* subsp. *wherryi* flowering at odd times, as late as the first of September.

I have named this interesting hybrid after botanist Frederick W. Case, who, with his late wife Roberta, studied pitcher plants for many decades in the Deep South, discovering many natural hybrids and formally recognizing *S. alabamensis* as a distinct species.

Sarracenia ×charlesmoorei

The final new hybrid comes from the mountains of the Carolinas, and is similarly namable when one recognizes a hybrid involving *S. purpurea*, and *S. jonesii* Wherry as distinct from *S. rubra* Walter. The hybrid name *S. ×chelsonii* Masters was published in 1877 as a cross between *S. purpurea* and *S. rubra*. Since that original plant came from Scotland Co. in eastern North Carolina, the one parent would have been *S. rubra* subsp. *rubra*.

Sarracenia ×charlesmoorei Mellichamp *hyb. nov.*—TYPE: U.S.A. North Carolina, Henderson Co., 20 October 2007, *Mellichamp s.n.* (HOLOTYPE: UNCC; ISOTYPE: NCU).

Syn.: *Sarracenia ×chelsonii sensu* Bell *non* Masters, J. Elisha Mitchell Sci. Soc. 68: 65. 1952, *p.p.*

A Sarracenia ×chelsonii foliis 25-50 cm longis, tubo apicem versus dilatato, 6-15 cm longe petiolatis, scapo foliis parum longioribus differt.

Plants intermediate between *S. purpurea* subsp. *purpurea* and *S. jonesii*, showing hybrid vigor in the production of robust, tall pitchers of thick texture. Pitchers on flowering size plants 25-50 cm long, slightly curving upwards, somewhat enlarged in the upper 1/4th of the tube as influenced by *S. jonesii*, dark green with dark red suffusion above, with heavy dark red veins. Orifice to 3 cm wide, rim tightly rolled, dark red. Hoods erect, cordate, to 6-8 cm wide, slightly undulate, heavily veined. Wing 0.75-1.5 cm wide, prominent, widest below middle. The solid non-hollow petioles 8-20 cm long, 1/3 or more the length of the leaves, as in *S. jonesii*. *Sarracenia rubra* has solid petioles less than 1/4th the length of the leaves. Flowering scapes somewhat longer than the leaves, as in *S. jonesii*, but not nearly twice as long as would be seen in *S. rubra*. Flowers and fruits slightly larger than *S. jonesii*, capsules to 1.5 cm wide.

These are magnificent hybrids (see Figures 3, 4), but are extremely rare as the habitats for *S. jonesii* are disappearing. The mountain bogs in flat depressions along streams are all but gone in the low mountains and steep escarpment where the two Carolinas meet, victims of development. The hillside seeps and water flows along majestic exposed rock surfaces on the south-facing Blue Ridge Escarpment south of Brevard, North Carolina are safer, but subject to drought—there are several nature preserves there in South Carolina now. The long-famous type location for this newly described hybrid is just about the last of its kind, and struggles to survive, even under knowledgeable management by The Nature Conservancy.

I have named this remarkable hybrid after the late Mr. Charles F. Moore, a well-known naturalist from Brevard, North Carolina. He was a long-time friend who showed me many interesting plants in the mountains. He was most famous for his knowledge of *Shortia galacifolia* and *Sarracenia jonesii*. Since there is another hybrid named *S. ×mooreana* (*S. leucophylla ×flava*), from England in 1877, I have used the more recent Mr. Moore's full name.

This may seem to be an academic exercise to name—or rename—these hybrids, but it is necessary because the taxa recognized at the species level as being involved are distinctive, and have distinct ranges, and one can see their traits in the hybrids. I would encourage all who study *Sarracenia* to be watchful for these hybrids so that they may become better known.

Figure 2: *S.* × *naczii* type specimen. Escambia Co., Florida, 3 Sept. 2007.
Figure 3: *S.* × *charlesmoorei* at the North Carolina type location, 12 Aug. 2008.
Figure 4: *S.* × *charlesmoorei*, on small lake near Brevard, North Carolina.

Photos (figures 2-4) by T.L. Mellichamp.

Acknowledgements: I would like to thank those who helped me in the study of *Sarracenia* hybrids: Ritchie Bell, who encouraged me by giving me my first scientific paper reprint (his 1952 hybrids paper); Steven Broyles, my excellent student field assistant in 1985; Fred Case, who introduced me to hybrids and the habits of *Sarracenia*; the late Rob Gardener of the North Carolina Botanical Garden with whom I traveled and made many horticultural hybrids; the late Charles Moore, who knew all the good sites around Brevard; Rob Naczi, who has talked with me for hours about *Sarracenia*; the late J.C. Moore, who knew all the good sites around Mobile; Stefan Ploszak, with whom I went to the Gulf Coast in 2007 and explored every spot; Donald Schnell, who knew all the good sites in the Green Swamp; and finally my wife Audrey—who would often go with me, but mostly she let me go—I love you all.

References

Bell, C.R. 1952. Natural hybrids in the genus *Sarracenia*: I. History, distribution, and taxonomy. J. Elisha Mitchell Sci. Soc. 68: 55-80. (An excellent introduction.)

Bell, C.R. and Case, F.W. 1956. Natural hybrids in the genus *Sarracenia*: II. Current notes on distribution. J. Elisha Mitchell Sci. Soc. 72: 142-152. (Many new discoveries)

Naczi, R.F.C., Soper, E.M., Case, F.W., and Case, R.B. 1999. *Sarracenia rosea* (Sarraceniaceae), a new species of pitcher plant from the southeastern United States. Sida 18(4): 1183-1206. (An excellent model for a taxonomic study, with many good references.)

A NOMENCLATURALLY ACCEPTABLE RANK FOR THE SUNDEW EPITHET "*OBOVATA*"

JAN SCHLAUER • Zwischenstr. 11 • 60594 Frankfurt/Main • Germany • jan@carnivorousplants.org

Keywords: taxonomy: *Drosera*.

The naming of plants for scientific purposes is governed by a set of rules that have been coined in order to reduce ambiguity and confusion. This set of rules is called the International Code for Botanical Nomenclature (ICBN), and the text is published online (http://ibot.sav.sk/icbn/main.htm).

Naturalists familiar with the circumboreal sundews will probably recognize the difference between *Drosera anglica* and the hybrid between *D. anglica* and *D. rotundifolia*. Those interested in sundew phylogeny should also know *D. anglica* is an amphidiploid (stabilized polyploid) hybrid between *D. linearis* and *D. rotundifolia*.

What has tricked many European botanists (all circumboreal sundews have been described by European botanists) is the circumstance that *D. linearis* (described in 1822 by a European botanist) only occurs in a limited area in North America, so it is the only naturally occurring boreal sundew species that does not have a circumboreal range. Thus, Europeans did not know the parent species well and by consequence they ignored the hybrid origin of *D. anglica* for a long time. This time was long enough to have the hybrid between *D. anglica* and *D. rotundifolia* discovered, described and named as *D. obovata* or *D.* ×*obovata* to indicate hybrid nature (cf. ICBN Art.H.1.1. "Hybridity is indicated by the use of the multiplication sign × or by the addition of the prefix "notho-" the term denoting the rank of the taxon."), again by European botanists (in 1826).

Technically, *D.* ×*obovata* is the name of a taxon at the rank of species (which is purely a question of classificatory ranking and independent from the hybrid or non-hybrid nature of a taxon). If it is taken into account that it is a hybrid (or of hybrid origin), it can be termed a "nothospecies" (cf. ICBN Art.H.3.3. "For purposes of homonymy and synonymy the multiplication sign and the prefix "notho-" are disregarded.").

One of the fundamental principles of botanical nomenclature is there can only be one accepted name for any given taxon at its particular rank, and this should be the first name that has been published according to ICBN rules ("legitimate") for this taxon at this rank (priority, cf. ICBN Art.11.4. "For any taxon below the rank of genus, the correct name is the combination of the final epithet of the earliest legitimate name of the taxon in the same rank, with the correct name of the genus or species to which it is assigned, except in cases of limitation of priority", none of the mentioned cases of limitation applies here).

For hybrids (including stabilized hybridogenic taxa of whatever age), there is an extension of the principle of priority in order to avoid the creation of multiple names for taxa at the same rank spanning the taxonomic range from one parent to the other. This extension mandates that there must be only one (again the earliest legitimate one) name at the rank of the parent taxa (ICBN Art.H.5.1. "The appropriate rank of a nothotaxon is that of the postulated or known parent taxa. H.5.2. If the postulated or known parent taxa are of unequal rank the appropriate rank of the nothotaxon is the lowest of these ranks.") for all hybrids that have the same parent taxa.

ICBN Art.H.4.1. "When all the parent taxa can be postulated or are known, a nothotaxon is circumscribed so as to include all individuals (as far as they can be recognized) derived from the crossing of representatives of the stated parent taxa (i.e., not only the F1 but subsequent filial generations and also back-crosses and combinations of these). There can thus be only one correct

name corresponding to a particular hybrid formula; this is the earliest legitimate name in the appropriate rank, and other names to which the same hybrid formula applies are synonyms of it."

All the parent species of *D. anglica* are known (*D. linearis* and *D. rotundifolia*). After rejection of the ambiguous name *D. longifolia*, *D. anglica* is the earliest (1778) legitimate name for a taxon resulting from hybridization of *D. linearis* and *D. rotundifolia*. *Drosera obovata* is the name for a taxon resulting from the hybridization of *D. anglica* and *D. rotundifolia*, i.e., technically a back-cross with one of the parents of *D. anglica*, not involving any different parent taxa.

Thus, the principle of priority precludes acceptance of the name *D. obovata* at its original (species) rank. There is, however, no reason to prevent naming this taxon at a lower rank under *D. anglica*.

As the hybrid between *D. anglica* and *D. rotundifolia* is usually sterile, it rarely occurs far from the parent species, although it may outcompete one of the parents due to hybrid vigour. From a chorological perspective it does not have a range that exceeds the range of overlap of the two parents, so it can be regarded as essentially sympatric with both.

The present author's concept for infraspecific classification in *Drosera* is to distinguish subspecies where the taxa are allopatric (whether derived from allopatric differentiation or from comparable trends of independent chorology), and to distinguish varieties where taxa are sympatric (chorologically coherent).

The acceptable (and earliest legitimate) name for the hybrid between *D. anglica* and *D. rotundifolia* is for the reasons above *D. anglica* var. *obovata*. This combination has already been published by Planchon (Ann. Sci. Nat. III.ser. 9: 200, 1848).

The hybrid nature of the taxon may be indicated by calling it *Drosera anglica* nothovar. *obovata* Planch. (pro var.) (ICBN Art.50.1. "When a taxon at the rank of species or below is transferred from the non-hybrid category to the hybrid category of the same rank (Art.H.10.2), or vice versa, the author citation remains unchanged but may be followed by an indication in parentheses of the original category.").

Writings from the Readership

Further comments on fauna trapped by *Eucnide urens* (Parry ex Gray) Parry

Jane M. Bowles • Department of Biology • University of Western Ontario • London, ON, N6A 5B7 • Canada • jbowles@uwo.ca

Keywords: observations: *Eucnide urens*.

This follows up on the articles about the insecticidal properties of *Eucnide urens* by Michael Metzler (2006) and Barry Rice (2006). In February 2008 I returned from California where, like Michael Metzler, I went for a hike in Mosaic Canyon, Death Valley and noticed that the lower surfaces of the leaves of *Eucnide urens* (desert stingbush or rock-nettle) were covered with dead dipteran flies. In my case it was cool and relatively wet and the plants were not flowering, nor were there many insects flying about. The fly carcasses were dry and mummified and I found them only on one plant out of the dozen or so that I checked. Barry Rice had the insects identified for me, by Dr. Robert Bugg (University of California, Davis), as *Peleteria* sp. (Tachinidae), a fly that as a larva is parasitic on lepidopteran larvae, and which is nectarivorous as an adult. I did not touch the plant because it looked ferocious and I have long ago learned to be cautious about touching desert plants with silica hairs. I did notice however that while the upper leaf surface only had long straight hairs the lower surface had a few straight hairs, but many shorter blunt-looking hairs. I could not tell in the field if these were barbed or glandular, but a photo-

graph (see Figure 1) clearly shows the multiple barbs of the blunt hairs. Park staff I talked to seemed to know nothing of this insecticidal plant.

It was only after my return that I tracked down the two Carnivorous Plant Newsletter articles by Metzler (2006) and Rice (2006). One of the plant field guides I looked at (Bowers 1998) did, however make reference to bats being found impaled on *Eucnide urens* and I was able to track the source for this observation. Stager (1943) describes finding a dead California leaf-nosed bat (*Macrotus californicus*) securely fastened to a shrub of *E. urens* in February 1942. He also makes reference to "numbers of dead and still living insects trapped among the spines". In July 1945 Ross Hardy found two species of bats, canyon bat (*Pipistrellus hesperus*) and a California myotis (*Myotis californicus*) hanging from a *E. urens* plant growing at the mouth of a cave (Hardy 1949).

It seems very unlikely that bat catching is a case of carnivory. Burdocks (*Arctium* spp.) have been recorded as catching both birds and bats (Little 1925; Lyon 1925; Johnson 1933), and photographs of several more recent records have been posted on the world wide web (pers. obs.). In these cases the animals were trapped by hooked spines on the dried seed heads, and the function of the hooked spines of the burs is clearly for seed dispersal. Neither bats nor birds are beneficial to the plant and trapping them must be an accidental side effect. On the other hand, for a desert shrub like *E. urens* growing in nutrient poor soils the benefits of extra nutrients in the leaf litter may be significant and could even outweigh the energetic costs of producing urticating hairs. I find it astonishing that this phenomenon has not been noted more often and remarked upon in the literature.

References

Bowers, J.E. 1998. Flowers and shrubs of the Mojave Desert. Western National Parks Association. 142 pp.

Figure 1: Dead *Peleteria* flies attached to the leaves of *Eucnide urens*. Two types of leaf hairs are clearly visible.

Hardy, R. 1949. General Notes: Notes on mammals from Arizona, Nevada, and Utah. J. Mammalogy 30: 434-435.
Johnson, P.B. 1933. General Notes: Accidents to bats. J. Mammalogy 14: 156.
Little, L.T. 1925. Birds caught by burdocks. Auk 42: 284.
Lyon, M.W. 1925. General Notes: Bats caught by burdocks. J. Mammalogy 6: 156.
Metzler, M. 2006. Insecticidal characteristics of the desert stingbush *Eucnide urens*. Carniv. Pl. Newslett. 35: 119-121.
Rice, B. 2006. Additional notes on *Eucnide urens* (Parry ex Gray) Parry in the family Loasaceae. Carniv. Pl. Newslett. 35: 122-123.
Stager, K.E. 1943. General Notes: California leaf-nosed bat trapped by desert shrub. J. Mammalogy 24: 396.

Notice of Dues Increase

There have been some great changes in the International Carnivorous Plant Society as of late. Among them is our new online membership system which allows the ease of membership renewals, free downloads of past issues of Carnivorous Plant Newsletter, and much more. Based on recent cost increases for publishing Carnivorous Plant Newsletter, the introduction of our online service, and increased postage rates, the Board has voted to raise annual membership fees by $5 to $30. New members will pay $35 to join. Late-renewing members will not automatically receive any issues missed. If available, back issues can be purchased for $6 from the membership coordinator.

These changes will be effective January 1, 2009. If your membership expires soon, you may want to renew today at our membership web site. Members can easily find their membership expiration date by clicking on "Profile" after signing into ClubExpress: http://icps.clubexpress.com/.

If you would like to renew early and no "renewal" link shows in your membership profile, please contact the membership coordinator for assistance.

Thank you all for your continued membership in the ICPS. This increase will help keep us in an excellent financial position.

Doug Darnowski, ICPS President

News and Views

Steve Amoroso (samo1251@mail.usyd.edu.au) writes: While the majority of carnivorous plant seeds usually sprout within 1 to 2 months after sowing, variations have been observed. I conducted experiments to explore how seeds stored in paper envelopes survive, outside of a refrigerator. I collected and stored seeds from *Dionaea* (typical green and a plant referred to by horticulturists as "Paradisia"), *Drosera capensis*, *D. filiformis* var. *filiformis*, *D. tokaiensis*, and *Sarracenia* from my plant collection. All seeds were sprinkled onto the surface of pure peat moss in pots and kept in a warm humid terrarium-like environment. None of the seeds were stratified prior to sowing. The time when the first seedling(s) began to sprout from each batch of seeds was recorded. *Sarracenia* seeds were planted after a range of storage days (0 to 57 days). *Drosera capensis* seeds were planted in two batches, after 41 or 551 days of storage. Seeds of *D. filiformis* var. *filiformis* 7 years old did not germinate.

Sarracenia seeds a week to two months old sprouted within 48.5 ± 5.0 days, whereas seeds sown within 2 days after collection sprouted in about half of that time. Most of the *D. capensis* seedlings that sprouted from the 41-day-old seeds germinated in 20-25 days, but the 551-day-old seeds took almost twice as long to sprout (>45 days) and produced only 3 seedlings. While *D. tokaiensis* seeds that were collected in 2005 and sowed in the beginning of 2008 sprouted, attempts to germinate *Drosera capensis* and *D. filiformis* var. *filiformis* seeds 3-7 years old were unsuccessful.

Freshly collected *Dionaea* seeds from the typical variety sprouted about three weeks after sowing, but only a single "Paradisia" seed germinated after ten weeks.

Ron Buczek (phissionkorps@gmail.com; 1000 Henderson St., Apt. #334, Fort Worth, TX 76102) writes: Do you live in Texas, Oklahoma, Arkansas, or Louisiana? A group of enthusiasts are seeking to start a regional carnivorous plant society to meet in the Dallas-Fort Worth area. We are looking for anyone that may be interested in joining and participating in auctions, lectures, field trips, etc. If you are interested and/or have any questions, please contact me or Michael Stiffler (michaelstiffler@gmail.com).

Ivan Snyder (ivan90254@yahoo.com) writes: I would like to clarify a matter related to an article that appeared in the March 2008 issue of Carnivorous Plant Newsletter. My description of the cultivar *Drosera* 'Ivan's Paddle' appears in this issue. See the editor's note at the bottom of the article. Editor Jan Schlauer claims that according to the International Code of Botanical Nomenclature (ICBN) the name *Drosera ×obovata* is illegitimate. Be aware that the ICBN presents two, not always compatible, nomenclatural systems. In my system the name is certainly legitimate. Even for Jan's system there are articles which allow the name. These are Art.14.1 and 14.2.

Art.14.1. "In order to avoid disadvantageous nomenclatural changes entailed by the strict application of the rules.... Conserved names are legitimate even though initially they may have been illegitimate."

14.2. "Conservation aims at retention of those names which best serve stability of nomenclature."

Drosera ×obovata (Mert. & Koch 1826) is important to science in being the first hybrid plant to be studied cytologically. Conserving its name is essential to differentiating related taxa. Notice that if we change *D. ×obovata* to a variety of *D. anglica* as Jan suggests, this assumes all (D. *×anglica*, various forms of *D. anglica*, and *D. ×obovata*) are the same nothotaxon (Latin nothus = not genuine). In the system I use, the amphiploid *D. anglica* is a genuine species, not a hybrid. You choose. Anyway, the current standing *D. ×obovata* is accepted by the Integrated Taxonomic Information System (www.itis.gov).

Bob Ziemer (rrz7001@humboldt.edu) writes: In 2001, I was cleaning out an old refrigerator at my office and came across a small cardboard box, stained with juice and lunch items. This box contained carnivorous plant seeds collected in 1979! Yes, that is not a typo, the seeds have been rattling from refrigerator to refrigerator for 22 years. I pondered whether I should just toss the box in the trash, but I got the urge to plant stuff.

Feeling a bit foolish about wasting my time, I started with 100 ancient *Drosophyllum lusitanicum* seeds I had harvested from parent plants in 1979. I lightly scarified them with 180-grit sand paper until I had just rubbed through the seed coat. After soaking them in water overnight, on March 25 I placed them on the surface of vermiculite in a small plastic pot, uncovered, in my unheated greenhouse. Each day I sprayed the surface with water until the bottom of the pot began to drip. Nighttime temperatures dropped to 33°F, daytime temperatures reached about 75°F. Thirteen days later (April 7), these old seeds began germinating! By April 29, 25 of the 100 *Drosophyllum* seeds had germinated. By the end of May, 95 seeds (95%) had germinated.

Included in that box from 1979 was a packet of *Byblis gigantea* seeds. On March 25, I sprinkled the *Byblis* seeds on the surface of a wet mixture of equal parts Canadian milled sphagnum peat and silica sand. Two days later, I burned a hand-full of dry grass on the surface of the pot. On April 29, the *Byblis gigantea* seeds started to germinate. The germination was restricted to one part of the pot, which might be related to some pattern of concentration of the fire or smoke. None of the various *Drosera* seeds in the box germinated.

Reports of seed longevity are not unusual, particularly for those seeds that require some form of treatment to break dormancy, such as scarification or fire. However, I am not aware of reports (published or otherwise) of the long-term viability of carnivorous plant seeds.

Literature Reviews

By Jan Schlauer

Halda, J.J., Heřtus, P., and Malina, M. 2007. Několik nových bolívijských rostlin—Some new Bolivian plants. Acta Musei Richnoviensis 14, 105-126. (Czech, English, Latin descriptions)

In this paper (pp.110-115), a new butterwort, *Pinguicula jarmilae*, is described from the Andes in Chuquisaca Dept., Bolivia. The flowers are similar (small, short spur) to those of the other Andine-Antarctic species (sect. *Ampullipalatum*) and especially of *P. involuta*, which is known from Peru and Bolivia, but the leaves are rather large (as in *P. elongata*), and the plants are stoloniferous (which appears to be unique in this group). (JS)

Hu, G.-W., Long, C.-L., and Liu, K.-M. 2007. *Utricularia mangshanensis* (Lentibulariaceae), a new species from Hunan, China, Annales Botanici Fennici 44: 389-392.

The new species described in this paper is a remarkable relative of *U. peranomala* (likewise from China), and its discovery doubles the species count of section *Kamienskia*. The main differences from *U. peranomala* are the deeply pinnatisect foliar organs (entire with slightly wavy margins in *U. peranomala*), the bracts and bracteoles are not connate, and the corolla is white with a yellow dot on the palate in *U. mangshanensis* (yellowish in *U. peranomala*). Unfortunately, no seeds are known from the new species. (JS)

Book Review

McPherson, Stuart. 2008. Glistening Carnivores - The Sticky-Leaved Insect-Eating Plants. Redfern Natural History Productions 390 pp. 279 images, Poole, Droset, England. ISBN978-0-9558918-1-6. www.redfernnaturalhistory.com £29.99 (US$52).

Reviewed by Stephen Davis

Things are changing in the carnivorous plant world. We have gone from a small handful of books on our favorite topic published sporadically, to a couple of new books every year. So many, in fact, that I was finding it hard to read yet another one. Fortunately, 'Glistening Carnivores - The Sticky-Leaved Insect-Eating Plants', is a breath of fresh air and full of new information, details, and insights, not to mention phenomenal photographs.

So much previous attention has been given to the "royal families" of carnivorous plants, *Nepenthes* and *Sarracenia*, that my beloved sundews have not received nearly enough attention. *Pinguicula* have not even fared as well as *Drosera* and a few others such as *Triphyophyllum*, even less. This book changes all that. The pictures of *Triphyophyllum* are among the first ever published, and the details included on this species alone nearly makes the book worth the price.

All sticky-leaved carnivorous plants are covered and although it seemed odd to me to group *Drosera* and *Pinguicula* together, there is plenty of coverage of both in this 390 page work, along with *Triphyophyllum*, *Drosophyllum*, *Roridula*, *Byblis*, and *Ibicella*.

McPherson has enjoyed the input of the who's who of the carnivorous plant community as he has traveled the world gathering data for this book, and it shows. While many contributed, as McPherson is quick to give credit, many of the observations are first hand and wonderfully detailed. There are plenty of beautiful and detailed pictures of the plants close up and in habitat.

There is more than just coverage of glistening species in this book. There is a short, but interesting history of how the plants were viewed before Darwin wrote about their carnivory. Then McPherson dives in to the most fascinating and in depth description of Darwin's research on carnivorous plants I have yet run across. McPherson documents Darwin's love of these plants with many quotes and excerpts, all painstakingly referenced, and put in context.

After Darwin, there is a well-designed description of the basic trapping mechanisms followed by an interesting discussion of possible evolutionary paths the plants may have taken to develop carnivory. McPherson includes a chapter on insects that live with carnivorous plants in what he describes as mutualistic relationships. He goes into great detail on the behaviors of the insects and how the plant and insect may benefit. McPherson was very careful not to make assumptions or use unpublished research, but he hinted at research that is to come, and it sounds exciting.

Each chapter covering a genus starts with taxonomy followed by botanical history, morphology and ecology. The botanical history covers how the genus got its name and how it was, or is, used by humans. Many of these histories and plant uses are fascinating in of themselves. *Triphyophyllum*, for instance is used for rope, and the dew from *Drosera* was believed to make cows amorous. Many of these uses were new to me, and the source of most of these fun-facts-to-know are included. This adds a certain level of credibility that I found comforting. So many times I've heard these stories but without knowing the source, was a little reticent to repeat them.

Sometimes McPherson marched through the timeline of discovery, and observation for a genus, noting the individuals that made the contributions and generously supplying excerpts of their writings.

The morphology of the plants is described in exquisite detail, and some of the more fascinating aspects of each genus and many species are not only covered thoroughly, but there are

complete reports included that were generously contributed by others. For instance there is a three page report submitted by Siegfried and Irmgard Hartmeyer on the yellow, lens-headed tentacles of *D. hartmeyerorum* whose discovery, just a short time ago, caused such a stir in the carnivorous plant community. The reader will be fascinated by these structures and the theories for their existence.

Coverage of larger genera, such as *Drosera*, is broken down logically and many selected species are described in detail. Although I thought I knew a fair amount about these plants, there were a lot of new observations and insights.

Under general ecology of each genus there is much detail of the environment the plants live in, how they have adapted to that environment and how their forms and trapping mechanisms have been tweaked to wreak the greatest damage to the insect population possible. There is often coverage of mutualistic insect behaviors in the individual species chapters as well, sometimes extending over several pages. McPherson seems to have a keen eye for observation and much of this material was new to me. He clears up many misconceptions and I garnered many new insights into how these plants might be grown in my own collection from his descriptions.

There is not a lot of time spent explicitly on cultivation. However, the tremendous details given on how carnivorous plants grow in habitat can only be extremely helpful.

This is an extremely well written, entertaining and readable book with a good amount of science sprinkled in. There is plenty of new information that will make this book of interest to even the most experienced and hardened carnivorous plant grower. No matter how many books you have, you will want to add Glistening Carnivores - The Sticky-Leaved Insect-Eating Plants to your collection.

Looking Back: CPN 25 years ago

Tom Gibson wrote about the spectacular pitcher plant *Nepenthes rajah*: "Feed traps insects, not fertilizer." Twenty-five years ago Tom Gibson was one of the only people in the west who was growing this species, and his recipe reported in this article is still followed by many today. It is a cultivation and conservation success story that *Nepenthes rajah* is vastly more easily obtainable today, from major carnivorous plant tissue culture outlets, than it was in Tom's day. (BR)

Darlingtonia californica
Dionaea muscipula
Drosera aliciae
D. binata
D. binata—Coromandel, NZ
D. burmannii
D. capensis 'Albino'—white flower
D. capensis—narrow leaf
D. capensis—red
D. capillaris
D. dielsiana
D. filiformis var. *filiformis*
D. glanduligera
D. indica
D. intermedia
D. intermedia—Cuba
D. intermedia—New Jersey, USA
D. intermedia—North Carolina, USA
D. intermedia—tropical
D. macrantha subsp. *macrantha*
D. menziesii subsp. *menziesii*
D. peltata subsp. *auriculata*
D. spatulata
D. tokaiensis
D. hybrid (*petiolaris* group)
Ibicella lutea
Nepenthes truncata
Proboscidea louisianica
P. parviflora var. *hohokamiana*
Sarracenia flava
S. leucophylla
S. leucophylla—Alabama, USA
S. oreophila—ESA/CITES, USA sales only
S. rubra subsp. *alabamensis*—ESA/CITES, USA sales only
S. rubra subsp. *jonesii*—ESA/CITES, USA sales only
S.—various hybrids

This is a partial list of the seeds available. A complete list is online at the ICPS web site, http://www.carnivorousplants.org/ or by sending a self-addressed, stamped (if USA), envelope to the seed bank address.

Seed packets are US$2 each. Please include US$3 postage and handling for each order. You may pay by cash, check, or money order in US$. Many members pay with cash. Please make checks and money orders payable to "International Carnivorous Plant Society".

The seed bank is a members-only benefit. The quantity of seed available to each member is 1 packet of each variety per month and 40 packets total in any 12 month period. Please list alternative seed selections, as other orders will arrive before yours. If you have an e-mail address, please include it so we can correspond should any issues arise. Seeds purchased through the seed bank are intended for your personal use only and may not be sold.

You are encouraged to stock the seed bank with seed produced by cultivated plants. The ICPS policy on wild seed collection is on line at the ICPS web site. Cultivation-produced seeds of species protected by the US Endangered Species Act are distributed within the US only, and in accordance with the ICPS's US Fish & Wildlife Service permit TE061005-1.

Donate seed and get credit for free seed from the seed bank. Seeds of selected varieties are available free to teachers for use in the classroom and to scientists and conservation organizations. It is ICPS policy not to sell internationally seed of plants protected by CITES Appendix I or the US Endangered Species Act.

John Brittnacher, Manager • john@carnivorousplants.org

Index of Contributors

Referees/Correspondents

The editors of Carnivorous Plant Newsletter and the officers of the International Carnivorous Plant Society thank the following authorities for acting as external referees for the papers requiring anonymous peer review in 2008: L. Anderson, D.W. Darnowski, R. Gibson, H. Luhrs, L. Mellichamp, H. Rischer, J. Schlauer, J. Steiger, R. Ziemer, and others.

Special Correspondents for the ICPS

S.J. Casper (Germany), R. Gibson (Australia), M.K. Janarthanam (India), K. Kondo (Japan), F. Rivadavia (Brazil), S. Zamudio (Mexico).